

REMARKS

Claims 1-36 are currently pending in the subject application and are presently under consideration. Claim 6 has been amended as shown on p. 4 of the Reply.

Favorable reconsideration of the subject patent application is respectfully requested in view of the comments and amendment herein.

I. 5-11-07 Telephonic Interview

Initially, applicant's representative wishes to gratefully acknowledge the Examiner's consideration of the present application *via* a telephonic interview conducted May, 11, 2007. In this regard, Applicant's representative appreciates the Examiner's discussion of the claimed subject matter's limitation "*transmitting a multicast-type message in unicast to the object.*" event or decision point in light of Jeong *et al.*, and as it applies to the claimed subject matter.

Specifically, it was posited to applicant's representative that Jeong *et al.* teaches transmitting a multicast message in unicast as used in the present invention's specification and claims. Although Jeong *et al.* discloses a system where both unicast services and multicast services can be discovered, applicants' representative respectfully submitted that the mechanism by which Jeong *et al.* allows service discovery is *via* a multicasted request that is responded to in unicast. Regarding the outstanding 35 U.S.C. § 102(a) rejection based on Jeong, *et al.*, applicant's representative submits the limitation "*transmitting a multicast-type message in unicast to the object,*" is not the mechanism of Jeong *et al.* and that the applicant's invention overcomes the limitations posed by such a mechanism as described in the specification and as is highlighted in greater detail below.

II. Objection to Drawings

The drawings are objected to because: Figures 3A, 3B, 3D, and 8 should be designated by a legend such as "-- Prior Art--" because, it is contended, that only that which is old is illustrated. Applicant's representative respectfully submits that although Figures 3A, 3B, 3D, and 8 may contain elements of prior art components, the figures are in proper form under C.F.R. § 1.81(a) and MPEP § 608.02(g) [R-3] because the drawings,

in conjunction with the applicable paragraphs of the written description, are necessary for the understanding of the particular aspect of the claimed subject matter. Applicant's representative further submits that, as described by the applicable paragraphs, the figures represent the particular aspects of applicant's invention as shown in the brief description and subsequent written description. Reconsideration and withdrawal of the objection to Figures 3A, 3B, 3D, and 8 under MPEP § 608.02(g) [R-3] is respectfully requested.

II. Objection to Claim 6

Claim 6 is objected to because of "the response in unicast **form** the object"; should be "... **from** the object". Reconsideration and withdrawal of the objection is respectfully requested in view of the amendment to claim 6 herein.

III. Summary of the Invention

Applicant's invention relates to presence tracking for datagram based protocols with search (e.g., network devices) that employs multicast-type messages transmitted in unicast to detect such devices. With the invention, a client application can dynamically determine if a network device is active thereby reducing network traffic related to discovering devices and/or services, and to searching for such devices and/or services.

In conventional datagram based discovery mechanisms and techniques, sign-on and sign-off messages are broadcast to nodes of a network during discovery processes and do not provide the temporal granularity that may be required by some applications that need to know frequently whether the device is present.

For example, the Universal Plug and Play specification (UPnP) specifies an M-SEARCH verb that allows a UPnP client application to search for UPnP devices. Normally this M-SEARCH verb is sent as a multicast datagram for discovering devices. However, inappropriate usage of broadcast datagrams unnecessarily impacts the network bandwidth by transmitting the datagram to all devices in the multicast group when it is not necessary to do so. Additionally, UPnP control point applications track presence of a device with a granularity no finer than a 30-minute minimum granularity, as specified by the UPnP specification. Moreover, these datagrams are more likely to be discarded by routers.

In accordance with one aspect of applicant's claimed invention, it is possible to send such M-SEARCH verbs as unicast datagrams to a specific destination device. The destination device can receive the M-SEARCH verb on its port and can treat the multicast-type message as if it was a search request broadcast to all devices. The device can then respond with a directed search response. Accordingly, in the context of the single control object simply needing to know the status of the single target object, the on-demand discovery message is in the format of multicast-type message transmitted as a unicast message to the target object. As a result, applicant's invention provides finer temporal granularity for object detection, while using less network bandwidth to discover the target device.

IV. Rejection of Claims 1-10, 12-20, 22, 25-30, 32-34 and 36 Under 35 U.S.C. § 102(a)

Claims 1-10, 12-20, 22, 25-30, 32-34 and 36 stand rejected under 35 U.S.C. § 102(a) as being anticipated by Jeong et al. ("Service Discovery Based on Multicast DNS in Ipv6 Mobile Ad-hoc Networks"). Claims 1, 17, 26, 33, and 36 are the independent claims. Reconsideration and withdrawal of the rejection of claims 1, 17, 26, 33, and 36 (and associated dependent claims 2-10, 12-16, 18-20, 22, 25, 27-32, and 34) under 35 U.S.C. § 102(a) is respectfully requested in view of the comments below.

For a prior art reference to anticipate, 35 U.S.C. §102 requires that "*each and every element* as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." *In re Robertson*, 169 F.3d 743, 745, 49 USPQ2d 1949, 1950 (Fed. Cir. 1999) (*quoting Verdegaal Bros., Inc. v. Union Oil Co.*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987)) (emphasis added).

As described above, applicant's invention provides target object presence tracking that employs *multicast-type messages transmitted in unicast* to detect such target objects.

In contrast, Jeong *et al.* merely discloses a mechanism for service discovery in IPv6 mobile ad-hoc networks (MANETs), which use multicast DNS. The mechanism

allows ad-hoc users to discover the service information that is necessary to connect or join to the service when the service name, transport protocol (e.g., TCP or UDP) and domain where the service is placed are given.

The mechanism uses Link-Local Multicast Name Resolution (LLMNR) has been which comprises a Responder and Sender. Sender is the resolver that sends LLMNR query in link-local multicast and Responder is the name server that sends the LLMNR response to Sender in unicast. When Sender receives the response, it verifies if the response is valid. If the response is valid, Sender stores it in LLMNR cache and passes the response to the application that initiated the DNS query.

In this regard, claims 1, 17, 26, 33, and 36 facilitates determining the presence of an object on a network. In particular, independent claims 1, 17, 26, 33, and 36 contain the similar limitation: *transmitting a multicast-type message in unicast to the object*. Pages 1763, 1765, and 1766 are referred to in the Official Action for support that Jeong, *et al.* discloses transmitting a multicast-type message in unicast to the object. However, these pages, as well as the remainder of the publication, disclose messages sent in multicast with the response in unicast: “sends LLMNR query in link-local multicast . . . sends the LLMNR response to Sender in unicast” (p. 1763, col. 2, ¶ II.B); “Client sends the DNS SRV query to get the information of a service . . . via site-local multicast through ANS Resolver. The mobile node that can serve the queried service responds to the client query and delivers the data of SRV resource record to the client via site-local unicast.” (p. 1766, col. 1, ¶ III.B).

Furthermore, the request-response procedure of service discovery of Jeong *et al.* is illustrated in Fig. 10, p. 1766 as SRV query via site-local multicast over UDP and SRV response via site-local unicast over UDP. Because the Jeong *et al.* messages are sent in multicast with unicast responses, Jeong *et al.* cannot be said to teach or suggest, among other aspects of the claimed invention, *transmitting a multicast-type message in unicast to the object*. Reconsideration and withdrawal of the rejection of claims 1, 17, 26, 33, and 36 (and associated dependent claims 2-10, 12-16, 18-20, 22, 25, 27-32. and 34) under 35 U.S.C. § 102(a) is respectfully requested in view of the comments above.

V. Rejection of Claims 11 and 21 Under 35 U.S.C. §103(a)

Claims 11 and 21 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Jeong *et al.* as applied to claims 1 and 17 above, and further in view of Bhatti (US 2003/0140344 A1). Claims 11 and 21 are dependent claims depending directly from claims 1 and 17 respectively.

To reject claims in an application under § 103, an examiner must establish a *prima facie* case of obviousness. A *prima facie* case of obviousness is established by a showing of three basic criteria. First, there must be some apparent reason to combine the known elements in the fashion claimed by the patent at issue (e.g., in the references themselves, interrelated teachings of multiple patents, the effects of demands known to the design community or present in the marketplace, or in the knowledge generally available to one of ordinary skill in the art. To facilitate review, this analysis should be made explicit. Second, there must be a reasonable expectation of success. *Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations.* See MPEP § 706.02(j). See also *KSR Int'l Co. v. Teleflex, Inc.*, 550 U. S. ___, 04-1350, slip op. at 14 (2007). The reasonable expectation of success must be found in the prior art and not based on applicant's disclosure. See *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991) (emphasis added).

Regarding claims 11 and 21, Bhatti is silent with respect to *transmitting a multicast-type message in unicast to the object*, and thus cannot be said to cure the deficiency of the root reference, Jeong *et al.* For at least this reason, reconsideration and withdrawal of the rejection of claims 11 and 21 under 35 U.S.C. § 103(a) is respectfully requested in view of the comments above.

VI. Rejection of Claim 23 Under 35 U.S.C. §103(a)

Claim 23 stands rejected under 35 U.S.C. §103(a) as being unpatentable over Jeong *et al.* as applied to claims 17 and 22 above, and further in view of Shrinivasan *et al.*, (US 2002/0174237). Claim 23 is a dependent claim depending directly from claim

17. Regarding claim 23, Shrinivasan *et al.* is silent with respect to ***transmitting a multicast-type message in unicast to the object***, and thus cannot be said to cure the deficiency of the root reference, Jeong *et al.* For at least this reason, reconsideration and withdrawal of the rejection of claim 23 under 35 U.S.C. § 103(a) is respectfully requested in view of the comments above.

VII. Rejection of Claims 24, 31 and 35 Under 35 U.S.C. §103(a)

Claims 24, 31 and 35 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Jeong *et al.* as applied to claims 17 and 26 above, and further in view of Devine *et al.*, (US 2002/0095399). Claims 24, 31, and 35 are dependent claims depending directly from claims 17, 26, and 33 respectively. Regarding claims 24, 31, and 35, Devine *et al.* is silent with respect to ***transmitting a multicast-type message in unicast to the object***, and thus cannot be said to cure the deficiency of the root reference, Jeong *et al.* For at least this reason, reconsideration and withdrawal of the rejection of claims 24, 31 and 35 under 35 U.S.C. § 103(a) is respectfully requested in view of the comments above.

CONCLUSION

The present application is believed to be in condition for allowance in view of the above comments and amendment. A prompt action to such end is earnestly solicited.

In the event any fees are due in connection with this document, the Commissioner is authorized to charge those fees to Deposit Account No. 50-1063.

Should the Examiner believe a telephone interview would be helpful to expedite favorable prosecution, the Examiner is invited to contact applicant's undersigned representative at the telephone number below.

Respectfully submitted,

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